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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,782	08/30/2001	Takashi Iwaki	35.C15730	7656

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EXAMINER

MACCHIAROLO, PETER J

ART UNIT	PAPER NUMBER
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2875

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,782

Applicant(s)

IWAKI ET AL.

Examiner

Peter J Macchiarolo

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☒ Claim(s) 1, 9, 16 and 21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt of the claim for foreign priority is acknowledged.

Information Disclosure Statement

2. The information disclosure statements (IDS's) submitted on February 19, 2001, and December 5, 2001 were filed in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Drawings

3. Figure 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: The instant Specification has multiple irregular and fragment-type sentences. Some examples of which can be found at page 14 lines 9-10 and page 16 lines 7-9. The Examiner recommends amending the Specification in order to comply with 37 CFR 1.52(a) and (b). Appropriate correction is required.

Claim Objections

5. Claims 1, 9, 16, and 21 are objected to because of the following informalities:
6. The limitations in line 7 of the claims recite, "...a step for providing potential difference..." This limitation is not clear, and the Examiner recommends amending the limitation to, "...a step for providing a potential difference..." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

7. Claims 1 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Minami et al (USPN 6,383,047; henceforth "Minami").
8. In regards to claims 1 and 9, Minami discloses in column 3 lines 30-40 and figures 2A-2D, a method for manufacturing a cathode (an electron emitting device) comprising a step for forming a polymer film (a mixed fluid 6 which contains a polymer) between a pair of electrodes (2, 3) formed on a substrate (1). Minami further discloses in column 9 lines 36-48, that the method of manufacture further comprises a step for heating the polymer film, wherein the solvent is evaporated in order to form an electro-conductive organic film 4. The Examiner notes

that a lower electrical resistance and a conductivity are inherent to the electro-conductive film 4 after being heated. The method of manufacture further comprises a step for providing a potential difference between the pair of electrodes to form a gap.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
10. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al (USPN 5,674,100; "Ono") in view of Yoshioka et al (USPN 5,749,763; "Yoshioka").
11. In regards to claims 1 and 9, Ono discloses in figures 3A-3C and column 7 lines 8-50, a method for manufacturing an electron emitting device comprising a step for forming an electro-

conductive film (4) between a pair of electrodes (5, 6) formed on a substrate (1), followed by heating the film, followed by supplying a potential difference between the pair of electrodes to form a gap. Ono further discloses in column 6 line 61 to column 7 line 5, that the step for heating the electro-conductive film is intended to lower the electric resistance of the electro-conductive film. Ono further teaches in column 2 line 67 to column 3 line 3, that this method of manufacturing can reduce the drive voltage and the power consumption level of the device.

12. Ono is silent to the electro-conductive film being a polymer.

13. However, Yoshioka teaches in figure 12, column 9, 17-30, and column 12 lines 31-43, that a polymer (11) is formed between a pair of electrodes (1, 2) on a substrate (4), and then heated to allow for a lower driving voltage, which is well known in the art to indicate a higher conductivity and lower resistance. Yoshioka further teaches in column 2 lines 6-35, that this configuration reduces electric power and time when forming the electron emission surface.

14. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the electron emitting device of Ono, including the polymer of Yoshioka, since Yoshioka teaches this configuration reduces electric power and time when forming the electron emission surface.

15. In regards to claims 2-6, 10-14, Ono and Yoshioka teach all of the recited limitations of claims 1 and 9 (above). Ono further teaches in column 9 lines 16-23, that the step of heating requires the film to be heated up between 100° C and 400° C.

16. Both Ono and Yoshioka are silent to the exact type of heating means used to heat the polymer during the heating step.

17. However, it is well known in the art that illuminating a laser beam (electron beam) or a light from a light source such as a xenon lamp or halogen lamp onto at least a part of a surface is an accepted means to provide a sufficient amount of heat.

18. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the electron emitting device of Ono and Yoshioka (above), including illuminating a laser beam, a xenon lamp, or halogen lamp to heat the surface of the film, since these particular means for heating are well known in the art.

19. In regards to claims 7-8, and 15, Ono and Yoshioka teach all of the recited limitations of claims 1 and 9 (above).

20. Yoshioka further teaches in column 12 lines 31-43, that a polymer (11) is an aromatic polymer film.

21. Both Yoshioka and Ono are silent to the exact method utilized to form the polymer film.

22. However, using an ink jet system for forming a polymer is well known in the art to be a very fast and efficient manufacturing method.

23. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the electron emitter of Yoshioka and Ono (above), including utilizing an ink jet system, since an ink jet system for forming a polymer is well known in the art to be a very fast and efficient manufacturing method.

24. Claims 16, 21, 24-26, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (USPN 5,749,763; "Yoshioka").

25. In regards to claims 16, 21, and 24-26, Yoshioka teaches in figure 12, column 9 line 14 to column 10 line 20, and column 12 lines 31-43 that a polymer (11) is formed between a pair of electrodes (1, 2) on a substrate (4), and then heated to preferably about 400° C.

26. Yoshioka is silent to the specific heating means.

27. However, it is well known in the art that illuminating a laser beam (electron beam) or a light from a light source such as a xenon lamp or halogen lamp onto at least a part of a surface is an accepted means to provide a sufficient amount of heat.

28. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the electron emitting device of Yoshioka, including illuminating a laser beam, a xenon lamp, or halogen lamp to heat the surface of the film, since these particular means for heating are well known in the art.

29. In regards to claims 29-30, Ono teaches all of the recited limitations of method claim 16 (above).

30. Yoshioka further teaches in figure 39A, that an electron emitting device (electron source) is manufactured by the method of claim 16. Yoshioka further teaches in column 2 lines 6-35, that this method reduces electric power and time when forming the electron emission surface.

31. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the electron emitting device of Yoshioka, including the method of Yoshioka, since Yoshioka teaches this method reduces electric power and time when forming the electron emission surface.

32. Claims 17-20, 22-23, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al (USPN 5,749,763; "Yoshioka") in view of Ono et al (USPN 5,674,100; "Ono").

33. In regards to claims 17-18, and 22-23, Yoshioka teaches all of the recited limitations of claims 16 and 21 (above).

34. Yoshioka is silent to the step for illuminating the electron beam onto the polymer film includes a step for giving conductivity to at least a part of the film.

35. However, Ono discloses in column 6 line 61 to column 7 line 5, that the step for heating the electro-conductive film (illuminating the electron beam) is intended to lower the electric resistance of the electro-conductive film. Ono further teaches in column 2 line 67 to column 3 line 3, that this method of manufacturing can reduce the drive voltage and the power consumption level of the device, which indicates to one skilled in the art that this step reduces the electrical resistance of the film.

36. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the electron emitter of Yoshioka, including Ono's steps of reducing electrical resistance, since Ono teaches that this method of manufacturing can reduce the drive voltage and the power consumption level of the device.

37. In regards to claims 19-20, and 27-28, Ono and Yoshioka teach all of the recited limitations of claims 16 and 21 (above).

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38. Yoshioka further teaches in column 12 lines 31-43, that a polymer (11) is an aromatic polymer film.

39. Both Yoshioka and Ono are silent to the exact method utilized to form the polymer film.

40. However, using an ink jet system for forming a polymer is well known in the art to be a very fast and efficient manufacturing method.

41. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the electron emitter of Yoshioka and Ono (above), including utilizing an ink jet system, since an ink jet system for forming a polymer is well known in the art to be a very fast and efficient manufacturing method.

Conclusion

42. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

43. U.S. Patents 6,213,834 to Ohnishi et al, 6,113,448 to Kobayashi et al disclose methods that are extremely similar to Applicant's recited method. However, they are not relied upon in this Office Action since the above patents share a common assignee and were not published in time to be considered prior art according to 35 U.S.C. 102(b). The Examiner further notes that the instant application is not subject to a double patenting rejection based on the above patents.

44. U.S. Patents 5,563,644 to Isganitis et al and 4,093,562 to Kishimoto teach and motivate different aspects of the Applicant's invention, however, they are not relied upon in this Office Action.

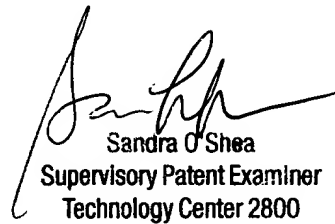
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45. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (703) 305-7198. The examiner can normally be reached on 7.30 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703) 305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

pjm
March 20, 2003


Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800